



ADVANCED SERIES METERS

BASED ON UP-TO DATE ADDAX TECHNOLOGY FOR RESIDENTIAL METERING

add new tech to your business!

AD21M
datasheet

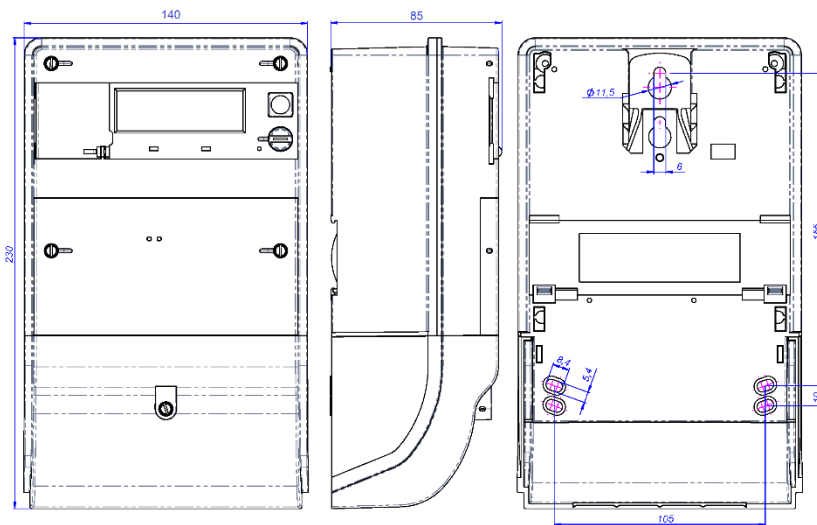
AD21M

**MODULAR SMART
SINGLE-PHASE ELECTRONIC METERS
DESIGNED FOR USE IN AMI/AMR SYSTEM**

OVERALL VIEW



Overall dimensions



KWh KVArh	Active energy (<i>export/import</i>) Reactive energy (<i>4 quadrants</i>)
V A	Measured quantities
THD	Calculation of total harmonic distortion factor
T1-T6	Multirate registration
	Built-in clock
	Event Log
	Load profile
I1≠I2	Differential current detection
IP54	Protection level
	Disconnecting built-in relay
	Replaceable battery
	Standard data model, open protocols
	Sealed optical port
	Sensors of cover opening – meter, terminal block, communication module
	Magnetic field sensor Magnetic protection shield
	Built-in communication interfaces
NIC	Various modules for WAN communication
	Authentication & Encryption

DLMS/COSEM SUPPORT

- Standard data model
- Standard communication protocols
- Interoperability

BUILT-IN CLOCK

- Real Time Clock, accuracy 0.5 s.
- IEC 62052-21 standard compliant
- External synchronization
- Daylight saving time (DST) support

MEASURED QUANTITIES

- Active energy, class B (1), export/import
- Reactive energy, class 2, 4 quadrants
- Power, Max Demand
 - integration period:
 - 15', 30', 60', 1 day
 - average interval: day, month
- Phase voltage/current, instantaneous value, RMS, neutral current, difference between phase and neutral currents

METERING DATA

- Actual meter readings
- Periodic meter readings: daily, monthly
- Interval meter readings: 5', 10', 15', 20', 30', 60'
- Timestamp

DATA STORAGE

- Non-volatile memory
- Storage capacity depends on data type and number of parameters and can be expanded for one type of data on the expense of another
- Up to 3 interval profiles and 1 billing profile. For example:
 - *15 minutes interval profile:* 6 parameters for about 63 days
 - *hourly interval profile:* 6 parameters for about 13 days
 - *monthly billing profile:* 6 parameters for about 110 months

MULTI-RATE METERING

- Up to 6 tariff registers
- Up to 12 changeovers per day
- Tariff indicator is displayed on LCD and transmitted to an external system
- Active and passive tariff plans, configurable activation time of the passive tariff plan

CALENDAR

- Up to 12 seasons per year
- Up to 7 daily profiles per week
- Up to 30 special days per year
- Support of movable holidays

TEST OUTPUTS

- Outputs: 2 optical outputs (LEDs), optical port
- Parameters under control: active energy, reactive energy

METER SELF-CONTROL

- Built-in test for continuous self-control
- Quick response on severe error
- Meter state events registering

EVENTS & ALARMS HANDLING

- Continuous control of current state of meter functional nodes and alarms/events, timestamps
- Standard set of events processing including: registration in the special logs and registers, event report sending, states displaying, load switching off on special cases
- Different types of event logs

BUILT-IN DISPLAY

- LCD, 8 digits, configurable decimal place (up to 3 digits)
- Special symbols, data identification according to IEC 62056-61 (OBIS)
- Metering data and specified messages displaying
- Service/client lists of parameters
- Manual/automatic modes of scrolling
- Display self-testing
- Configurable backlight mode

LOAD CONTROL

- Built-in relay (60 A)
- Control modes:
 - remote (by command)
 - local (by condition)
 - manual (by push button)
- Continuous relay state control
- Relay status displaying
- Load switch events registering

ELECTRICAL ENERGY QUALITY CONTROL

- Quality indexes:
 - average voltage
 - voltage sags and swells
 - outages
 - network frequency
 - THD for voltage/current harmonics
- Remote or local configuring of parameters thresholds
- Quality control events registering

THRESHOLDS MANAGEMENT

- Configurable thresholds values
- Possibility to disconnect consumer from the network, when a threshold is crossed

FRAUD & THEFT PROTECTION

- Continuous monitoring;
- Fraud types under control:
 - meter/terminal block cover opening
 - inadmissible differential current
 - strong external magnetic field
- Hall sensor for magnetic field detection
- Tamper detection: shunt in the phase circuit and transformer in the neutral

- Protective seals

- Fraud events registering

INFORMATION SECURITY

- Communication encryption (AES-GCM-128 security suite)
- Data access according to stated rights
- Firmware protection
- Security events registering

DATA TRANSMISSION

- Data transmission on demand or by schedule
- Request types:
 - Data Concentrator request (via communication channel)
 - Hand Held Unit request (via optical port)

WAN NIC COMMUNICATIONS

- One basement (X3 NIC terminal) – various communication modules (optional):
 - 2G/3G/4G
 - NBIoT
 - LoRa
 - PLC/PLC + RF Hybrid. X2 terminal for coupler connection.

BUILT-IN COMMUNICATIONS

- RS-485 interface (X1 RS-485-2 terminal)
 - provides a link between the meter and other devices via WAGO connectors
- Bluetooth 5.0 to communicate with other closely-spaced smart meters.

OPTICAL PORT

- IEC 62056-21 standard compliant
- Data transmission rate up to 57 600 bps
- Possibility of local data exchange and meter parameterization
- Sealable optical port case

PUSH BUTTONS

- Accessible multi-functional button;
- Sealable service button, is active when the power is on.

METER PARAMETERIZATION

- Remote (via communication channel) or local (via optical port)
- Assignment of the access rights from HES
- Parameterization events registering

SOFTWARE UPDATE

- Remote (via communication channel) or local (via optical port)
- Software update events registering

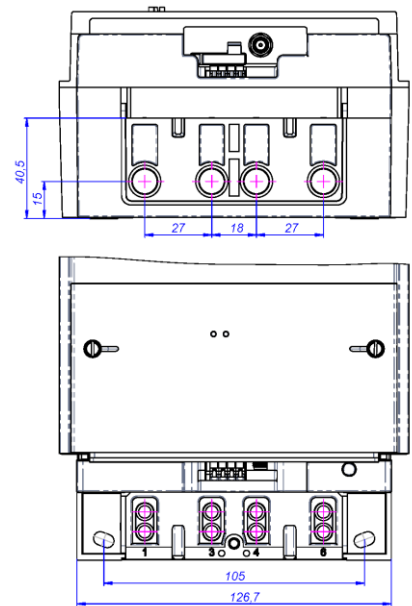
BACKUP POWER SUPPLY

- Two batteries (optionally):
 - Internal battery to support RTC and one-time operation of opening sensors. Battery lifetime - not less than 15 years
 - Replaceable battery in special compartment on the meter front.

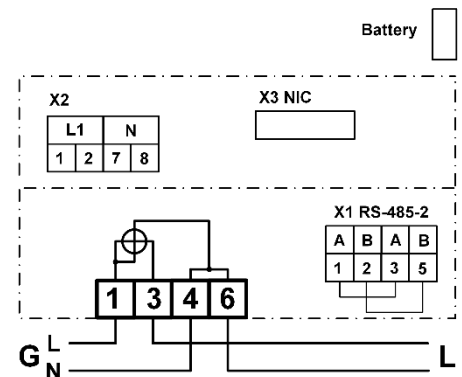
TECHNICAL SPECIFICATIONS

Accuracy class:	
- Active energy	B (1)
- Reactive energy	2
Reference current, Iref	5 A
Maximum current, Imax	60 A
Minimum current	0.05 Iref
Starting current:	
- Active energy	0.004 Iref
- Reactive energy	0.005 Iref
Reference voltage, Un	230 V
Voltage range	from 0.8 Un to 1.2 Un
Reference frequency	50 Hz
Meter constant:	
- Active energy	1 000 imp/kWh
- Reactive energy	1 000 imp/kvarh
Temperature range	from -40°C to +70°C
Internal clock	quartz crystal 32 kHz
Clock accuracy (at 25°C) (IEC 62052-21)	≤0.5 s / 24 h
Inherent consumption of current circuit, not more (IEC 62053-61)	1 VA
Inherent consumption of voltage circuit, active/total, per phase, not more (IEC 62053-61)	2 W / 10 VA
Insulation strength (IEC 61010-1-90)	4 kV, 50 Hz, 1 min
Shock voltage (IEC 60060-1)	12 kV, 1.2/50 μs
Electrostatic discharge (IEC 61000-4-2)	15 kV
High frequency radiant field (IEC 61000-4-3)	10 V/m
High frequency interferences (IEC 61000-4-4)	4 kV
Surge immunity test (IEC 61000-4-5)	6 kV
IP rating	IP54
Mean total lifetime, not less	20 years
Dimensions, W x H x D	140 x 230 x 85 mm

TERMINAL BLOCK DIMENSIONS



CONNECTION DIAGRAM (IEC)



DESIGN FEATURES

TERMINAL BLOCK

- Universal clamping type for terminals of current circuits: D = 8 mm

HOUSING

- Light-tone non-flammable polycarbonate

MOUNTING

- By 3 fixing points or on DIN rail (35 mm)

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